RLS27 Rugged LED Strip Light Instruction Manual

Original Instructions
p/n: 225441 Rev. A
November 29, 2023

Contents

Chapter Contents

Chapter 1 Features

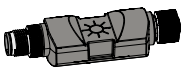
Banner's RLS27 Rugged LED Strip Light has a sturdy aluminum housing and is encased in a clear shatterproof, UV-stabilized, polycarbonate shell, and protected with robust end caps making it ideal for harsh outdoor applications.

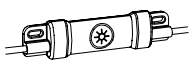
- Designed for the car wash industry with superior chemical resistance and protection for the most demanding environments
- Focused lens models are ideal for high brightness applications and outdoor settings
- Rugged, waterproof IP67 and IP69K per DIN 40050-9 rated housing for use in challenging applications
- Both single color and multicolor models available
- Many lengths available from 285 mm to 2270 mm (1 ft to 8 ft)
- Brackets included, and optional brackets and additional accessories available to suit any situation
- Easy quick disconnect standard on all models

IMPORTANT: Read the following instructions before operating the light. Please download the complete RLS27 Rugged LED Strip Light technical documentation, available in multiple languages, from www.bannerengineering.com for details on the proper use, applications, Warnings, and installation instructions of this device.

IMPORTANT: Lea el siguiente instructivo antes de operar el luminario. Por favor descargue desde www.bannerengineering.com toda la documentación técnica de los RLS27 Rugged LED Strip Light, disponibles en múltiples idiomas, para detalles del uso adecuado, aplicaciones, advertencias, y las instrucciones de instalación de estos dispositivos.

IMPORTANT: Lisez les instructions suivantes avant d'utiliser le luminaire. Veuillez télécharger la documentation technique complète des RLS27 Rugged LED Strip Light sur notre site www.bannerengineering.com pour les détails sur leur utilisation correcte, les applications, les notes de sécurité et les instructions de montage.

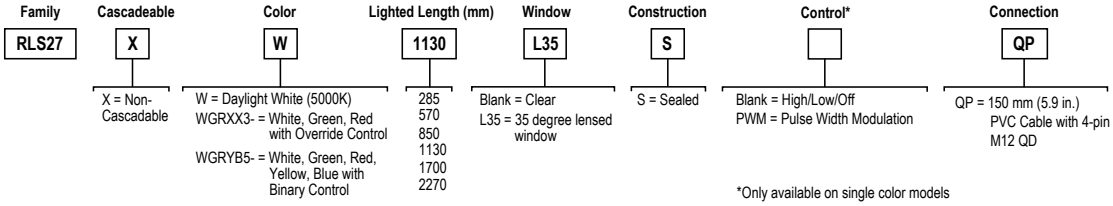




For PWM dimming, use with the LC15T-127AP1RBGQP or LC25T-AP1RGBQ dimmer modules. For more information, refer to the LC15T In-Line Touch Switch datasheet, p/n 217460, or to the LC25T In-Line Touch Switch datasheet, p/n 231078. For single color models only.

Models

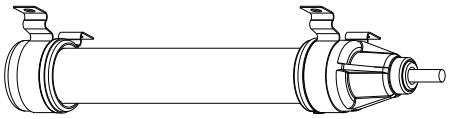
All models require a mating cordset. See "Cordsets" on page 15.



Chapter Contents

Chapter 2 Installing the RLS27 Rugged LED Strip Light

Attach Included Bracket



1. Remove power at the DC power supply.

NOTE: This device requires a Class 2 or SELV DC power supply, max 4 A.

2. Remove the light from the packaging and inspect it for damage before installing it.
3. Attach the included LMBHLS27S brackets to the light. Apply Anti-Rotation Pads if desired.
4. Select a suitable horizontal or vertical mounting location.
5. Place the light in the mounting location and mark the positions of the bracket mounting holes. Additional bracket options are available (see "Brackets " on page 16).
6. Drill the holes and use appropriate screws to secure the bracket to the mounting location. Designed to be used with M5 or #10 stainless-steel hardware.
7. Attach cordsets per the wiring diagram. Terminate wire as appropriate per application.

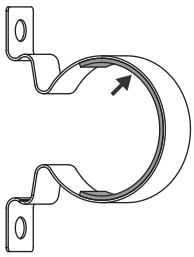
Installation is complete. Reapply power at the DC power supply.

Light Anti-Rotation Pads

In applications where vibration is a concern or when light orientation is critical, use anti-rotation pads to prevent the light from rotating within the mounting brackets. Light rotation caused by vibration may be more pronounced with longer length lights.

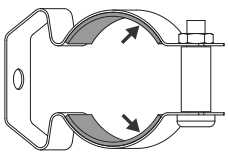
Attach the anti-rotation pads to the brackets, as shown in the figures, with the adhesive side applied to the bracket.

Included Mounting Hardware with Anti-Rotation Pads

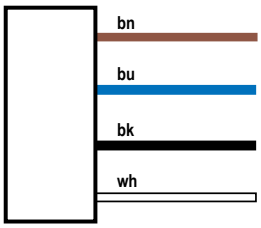
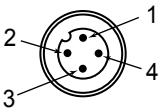


NOTE: When using the optional mounting hardware, cut the anti-rotation pad and apply it to both sides of the mounting bracket as shown.

Optional Mounting Hardware with Anti-Rotation Pads



Wiring

Diagram	Wire	Single Color Models	Multicolor Models	PWM Models	Pinout (Male)
	1 - Brown	12 V DC to 30 V DC	Input 1: 24 V DC	12 V DC to 30 V DC	 1 = Brown 2 = White 3 = Blue 4 = Black
	2 - White	Not used	Input 3: 24 V DC	Not used	
	3 - Blue	DC common	DC common	DC common	
	4 - Black	Connect to 12 V DC to 30 V DC for 50% maximum intensity. For maximum intensity, leave the black wire floating or connected to common.	Input 2: 24 V DC	Pulse width modulation (PWM) input. For maximum intensity, leave the black wire floating or connected to common. Connecting to 12 V DC to 30 V DC causes the LEDs to shut off.	

Control for Multicolor Models: 3-Color Override Control (Color 3 overrides Colors 1 and 2, Color 2 overrides Color 1)

Input 1: Pin 1 Brown Wire	Input 2: Pin 4 Black Wire	Input 3: Pin 2 White Wire	LED Color
—	—	—	Light OFF
+24 V DC	—	—	Color 1 ON
—	+24 V DC	—	Color 2 ON
+24 V DC	+24 V DC	—	Color 2 ON
—	—	+24 V DC	Color 3 ON
+24 V DC	—	+24 V DC	Color 3 ON
—	+24 V DC	+24 V DC	Color 3 ON
+24 V DC	+24 V DC	+24 V DC	Color 3 ON

Control for Multicolor Models: 5-Color Binary Control (Binary input state controls color)

Input 1: Pin 1 Brown Wire	Input 2: Pin 4 Black Wire	Input 3: Pin 2 White Wire	LED Color
—	—	—	Light OFF
+24 V DC	—	—	Color 1 ON
—	+24 V DC	—	Color 2 ON
—	—	+24 V DC	Color 3 ON
+24 V DC	+24 V DC	—	Color 4 ON
+24 V DC	—	+24 V DC	Color 5 ON
—	+24 V DC	+24 V DC	Light OFF
+24 V DC	+24 V DC	+24 V DC	Light OFF

Chapter Contents

Chapter 3 Specifications

Single Color Models

Supply Voltage

285 mm to 1130 mm models: 12 V DC to 30 V DC

1700 mm and 2270 mm models: 24 V DC (+25% / -10%)

Use only with a suitable Class 2 power supply (UL) or SELV power supply (CE)

Supply Current

Lighted Length (mm)	Max. Current Draw (A) at 12 V DC	Typical Current Draw (A)		
		12 V DC	24 V DC	30 V DC
285	0.8	0.66	0.3	0.24
570	1.6	1.36	0.61	0.48
850	2.4	2.13	0.92	0.73
1130	3.2	3.04	1.24	0.97

Lighted Length (mm)	Max. Current Draw (A) at 24 V	Typical Current Draw (A) at 24 V DC
1700	2.4	1.86
2270	3.2	2.48

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Mounting

Bracket kit LMBHLS27S included

Optional bracket kits available (see "Brackets " on page 16)

Connections

150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector

Do not spray cable with high-pressure sprayer or cable damage will result

See "Cordsets" on page 15

LED Lifetime

Lumen Maintenance - L_{70}

When operating within specifications, output will decrease less than 30% after 70,000 hours.

Environmental Rating

IP67, IP69K per DIN 40050-9

Operating Temperature

–40 °C to +70 °C (–40 °F to +158 °F)

Light output begins to decrease above 50 °C (122 °F) and will be approximately 65% of max intensity at 60 °C (140 °F) and 30% of max intensity at 70 °C (158 °F)

Light Characteristics

Daylight White

Color Temperature (CCT): 5000 K (± 300K)

Lumen output: 850 (±5%) per foot, typical at 25 °C (77 °F)

Luminous efficacy: 118 lumens/Watt typical at 24 V DC at 25 °C (77 °F)

CRI: 85, typical

Dimming and Control

High/Low/Off models:

High Setting: 100% intensity
Low Setting: 50% intensity

Pulse Width Modulation (PWM) models:

Frequency: Up to 1000 Hz
Voltage: 8 V DC to 30 V DC
Current: 4 mA max. per foot

See "Dimmers and Switches" on page 16

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

Construction

Clear anodized aluminum housing

UV-stabilized polycarbonate outer housing with vent

Storage Temperature

–40 °C to +70 °C (–40 °F to +158 °F)

Vibration and Mechanical Shock

Impact: IK10 (IEC 60068-2-75)

Vibration: 10 Hz to 55 Hz, 1.0 mm peak-to-peak amplitude per IEC 60068-2-6 (5 minute sweep, 30 minute dwell)

Shock: 15G 11 ms duration, half sine wave per IEC 60068-2-27

Certifications and Approvals

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

UL/cULus E338626

Multicolor Models

Supply Voltage

24 V DC (+20% / -10%)

Use only with a suitable Class 2 power supply (UL) or SELV power supply (CE)

Supply Current

Lighted Length (mm)	Typical Current (A) at 25 °C	Maximum Current (A) at -40 °C
285	0.315	0.4
570	0.63	0.8
850	0.945	1.2
1130	1.26	1.6
1700	1.89	2.4
2270	2.52	3.2

Connections

150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector

Do not spray cable with high-pressure sprayer or cable damage will result

See "Cordsets" on page 15

LED Lifetime

Lumen Maintenance - L_{70}

When operating within specifications, output will decrease less than 30% after 70,000 hours.

Environmental Rating

IP67, IP69K per DIN 40050-9

Operating Temperature

–40 °C to +50 °C (–40 °F to +122 °F)

Storage Temperature

–40 °C to +70 °C (–40 °F to +158 °F)

Vibration and Mechanical Shock

Impact: IK10 (IEC 60068-2-75)

Vibration: 10 Hz to 55 Hz, 1.0 mm peak-to-peak amplitude per IEC 60068-2-6 (5 minute sweep, 30 minute dwell)

Shock: 15G 11 ms duration, half sine wave per IEC 60068-2-27

Leakage Current Immunity

400 µA

Dimming and Control

On/off

See the two Control for Multicolor Models tables in "Wiring" on page 6

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	1.0	30	0.5

Construction

Clear anodized aluminum housing

UV-stabilized polycarbonate outer housing with vent

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Mounting

Bracket kit LMBHLS27S included

Optional bracket kits available (see "Brackets " on page 16)

Certifications and Approvals

Banner Engineering BV
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1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

UL/cULus E338626

Light Characteristics

Daylight White Efficacy: 91 lumens/Watt typical at 24 V DC at 25 °C (77 °F)
CRI: 80 minimum

Color	Dominant Wavelength (nm) or Color Temperature	Lighted Length Lumens (Typical at 25 °C)[1]					
		285	570	850	1130	1700	2270
Daylight White	5000K (± 300K)	690	1380	2070	2760	4140	5520
Green	525 nm	425	850	1275	1700	2550	3400
Red	625 nm	195	390	585	780	1170	1560
Yellow	580 nm	605	1210	1815	2420	3630	4840
Blue	470 nm	115	230	345	460	690	920

FCC Part 15 Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada ICES-003(B)

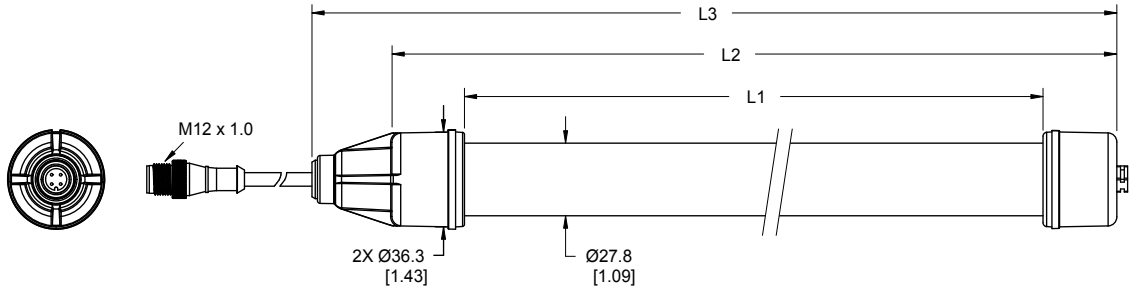
This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

[1] Multicolor values shown at 25 °C. Current and lumen values decrease 0.4% per 1 °C from ambient. For example, an 1130 mm unit will have a maximum current of 1.600 A at -40 °C and 1.134 A at +50 °C.

Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise.



Model	L1	L2	L3
RLS27..0285..	282 mm (11.1 in)	339 mm (13.4 in)	370 mm (14.6 in)
RLS27..0570..	564 mm (22.2 in)	621 mm (24.5 in)	652 mm (25.7 in)
RLS27..0850..	846 mm (33.3 in)	903 mm (35.6 in)	934 mm (36.8 in)
RLS27..1130..	1128 mm (44.4 in)	1185 mm (46.7 in)	1216 mm (47.9 in)
RLS27..1700..	1694 mm (66.7 in)	1751 mm (68.9 in)	1783 mm (70.2 in)
RLS27..2270..	2258 mm (88.9 in)	2315 mm (91.1 in)	2347 mm (92.4 in)

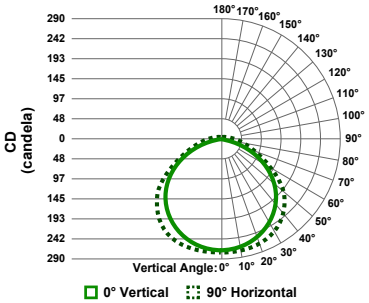
Photometric Data

The optical data shown below is for a standard single color model, daylight white only. To calculate lux and candela values for other colors in the multicolor models, multiply the values shown on the charts by the following factors:

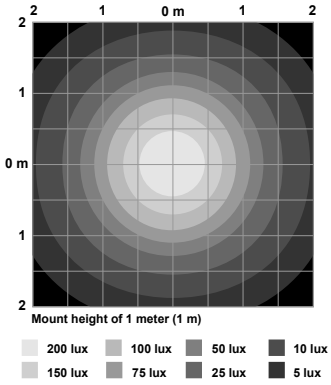
Color for Multicolor Models	Multiplier
Daylight White	0.812
Green	0.5
Red	0.229
Yellow	0.712
Blue	0.135

285 mm Clear Window

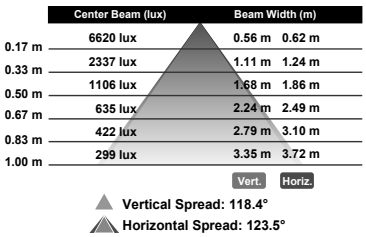
Polar Candela Distribution



Isolux Pattern

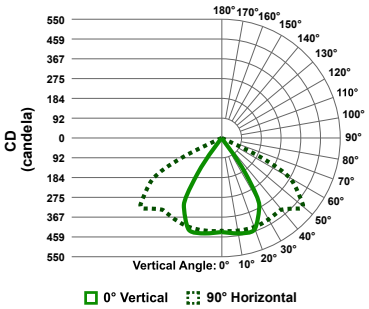


Illuminance at a Distance

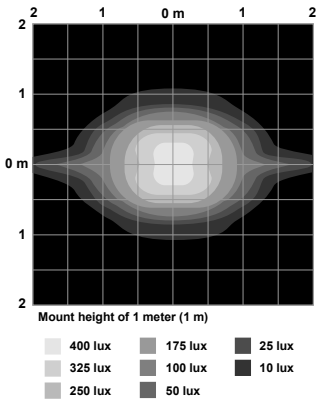


285 mm L35 Window

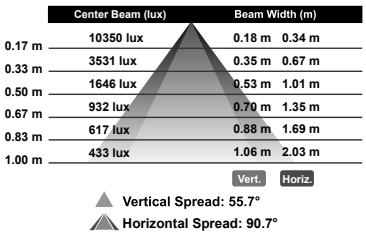
Polar Candela Distribution



Isolux Pattern



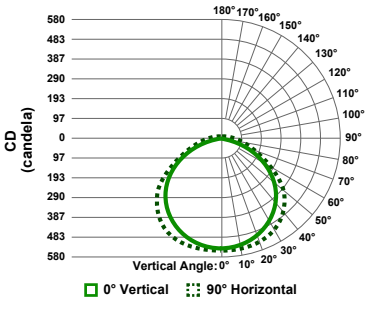
Illuminance at a Distance



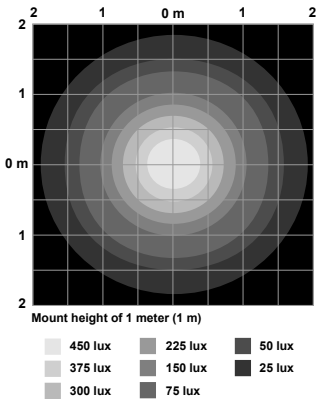
Vertical Spread: 55.7°
Horizontal Spread: 90.7°

570 mm Clear Window

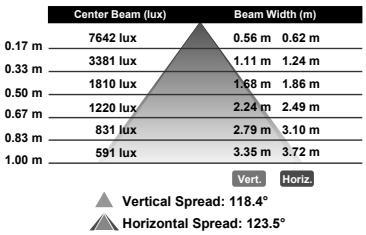
Polar Candela Distribution



Isolux Pattern



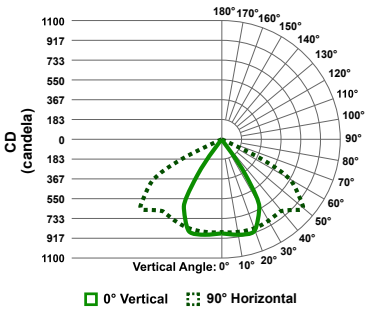
Illuminance at a Distance



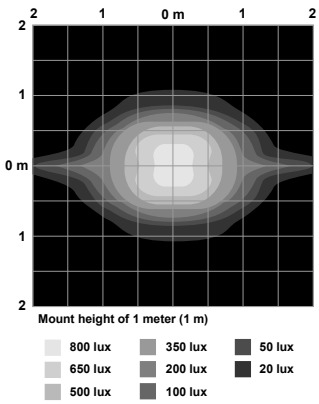
Vertical Spread: 118.4°
Horizontal Spread: 123.5°

570 mm L35 Window

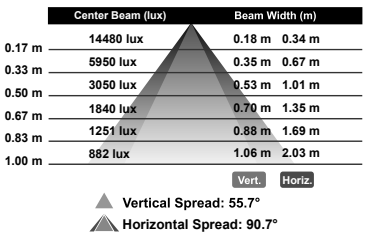
Polar Candela Distribution



Isolux Pattern



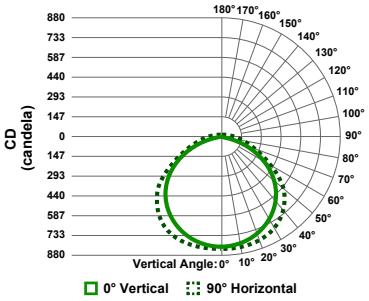
Illuminance at a Distance



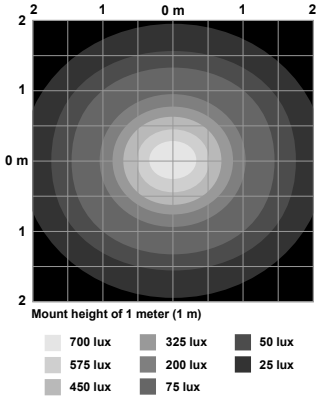
Vertical Spread: 55.7°
Horizontal Spread: 90.7°

850 mm Clear Window

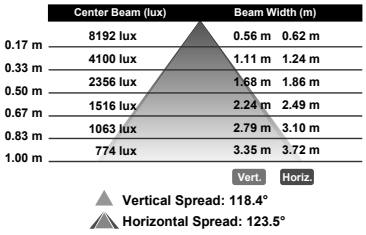
Polar Candela Distribution



Isolux Pattern



Illuminance at a Distance

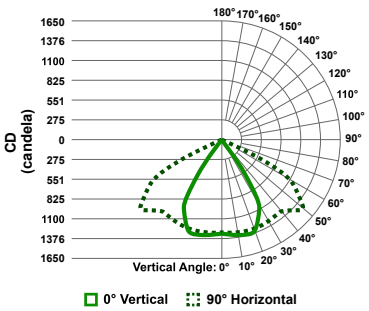


Vertical Spread: 118.4°

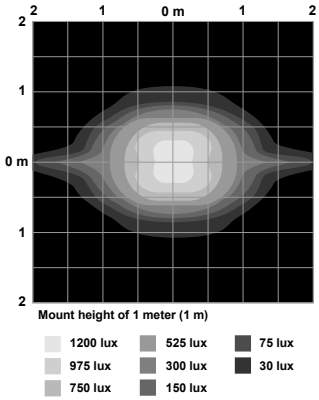
Horizontal Spread: 123.5°

850 mm L35 Window

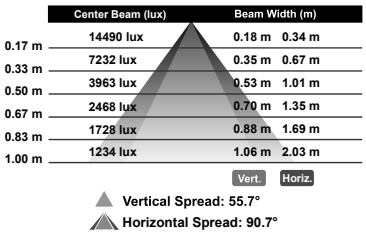
Polar Candela Distribution



Isolux Pattern



Illuminance at a Distance

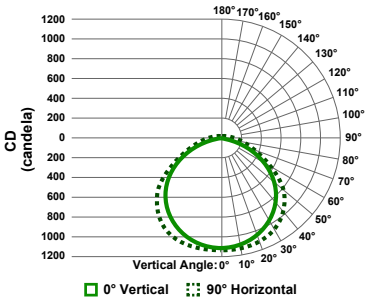


Vertical Spread: 55.7°

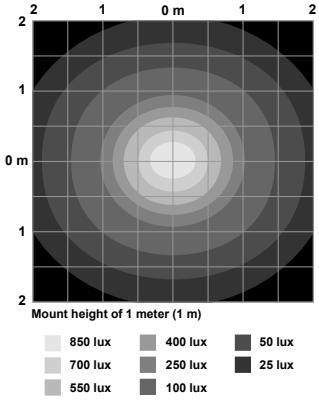
Horizontal Spread: 90.7°

1130 mm Clear Window

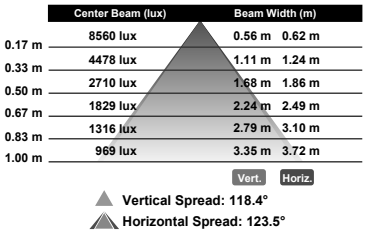
Polar Candela Distribution



Isolux Pattern



Illuminance at a Distance

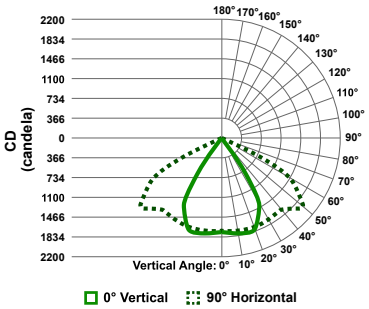


Vertical Spread: 118.4°

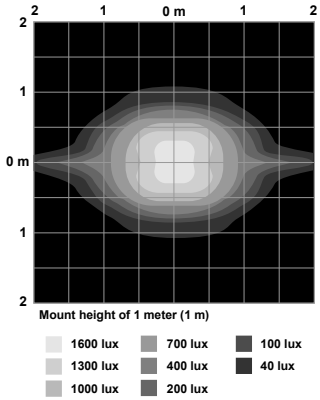
Horizontal Spread: 123.5°

1130 mm L35 Window

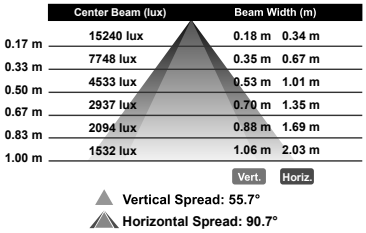
Polar Candela Distribution



Isolux Pattern

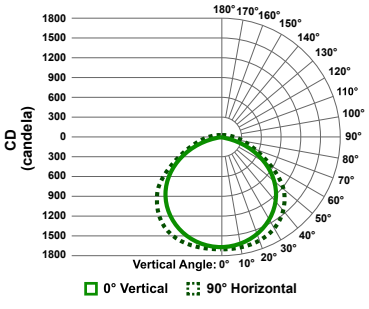


Illuminance at a Distance

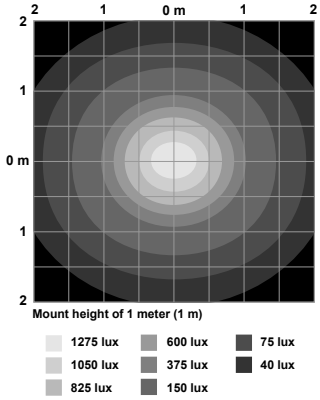


1700 mm Clear Window

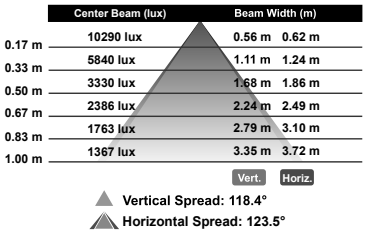
Polar Candela Distribution



Isolux Pattern

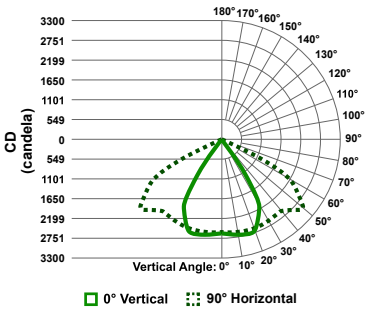


Illuminance at a Distance

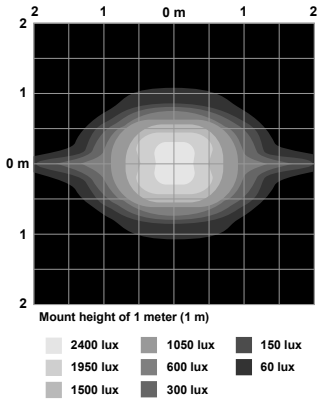


1700 mm L35 Window

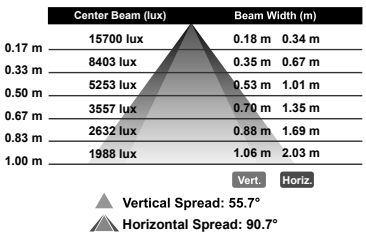
Polar Candela Distribution



Isolux Pattern

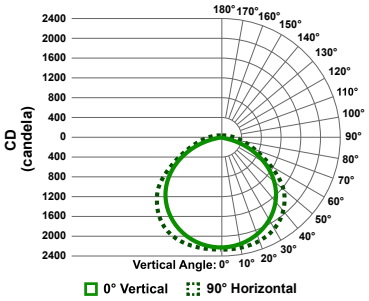


Illuminance at a Distance

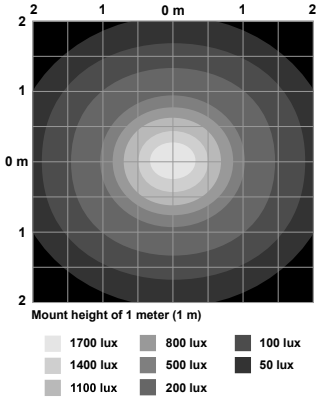


2270 mm Clear Window

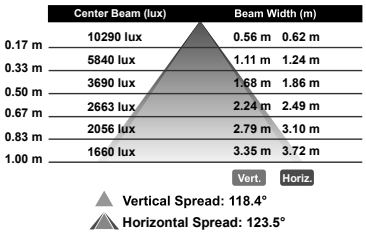
Polar Candela Distribution



Isolux Pattern

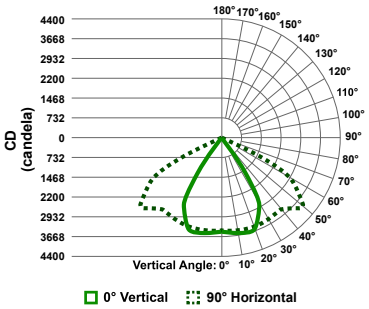


Illuminance at a Distance

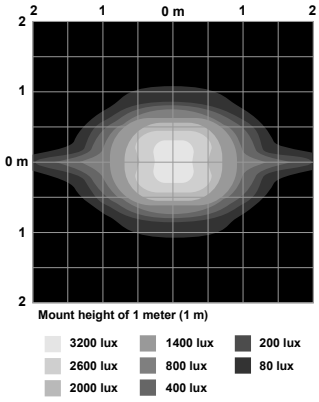


2270 mm L35 Window

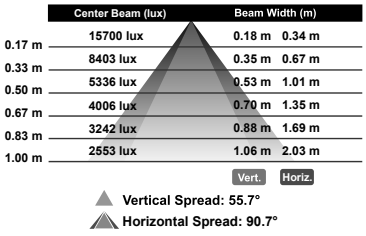
Polar Candela Distribution



Isolux Pattern



Illuminance at a Distance



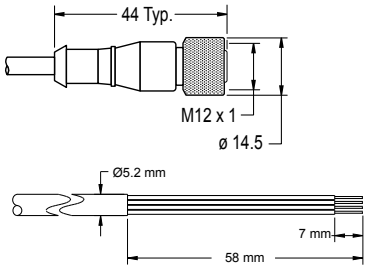
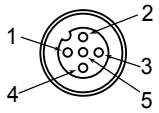
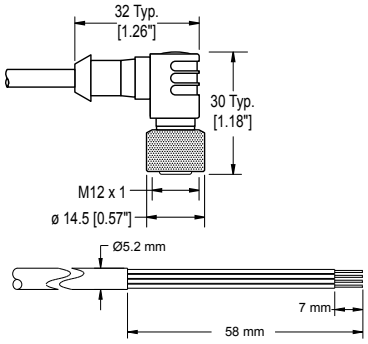
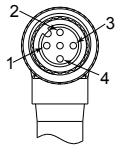
Chapter Contents

Chapter 4 Accessories

Cordsets

Standard Cordsets

4-Pin Threaded M12 Cordsets—Single Ended

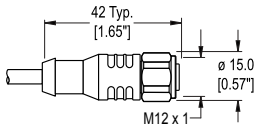
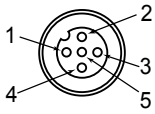
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-406	2 m (6.56 ft)	Straight		
MQDC-415	5 m (16.4 ft)			
MQDC-430	9 m (29.5 ft)			
MQDC-450	15 m (49.2 ft)			
MQDC-406RA	2 m (6.56 ft)	Right-Angle		
MQDC-415RA	5 m (16.4 ft)			
MQDC-430RA	9 m (29.5 ft)			
MQDC-450RA	15 m (49.2 ft)			

1 = Brown
2 = White
3 = Blue
4 = Black
5 = Unused

Washdown Rated Cordsets

Polypropylene jacket and connector body, stainless steel coupling nut

5-Pin Threaded M12 Washdown Cordsets with Shield—Single Ended

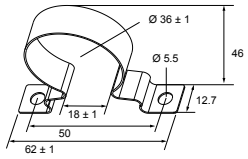
Model	Length	Style	Dimensions	Pinout (Female)
MQDCWD-506	2 m (6.56 ft)	Straight		
MQDCWD-530	9 m (29.5 ft)			

1 = Brown
2 = White
3 = Blue
4 = Black
5 = Gray

Brackets

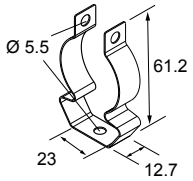
LMBHLS27S

- Set of 2 brackets
- Impact absorbing
- 300 series stainless steel
- Clearance for M5 or #10 hardware



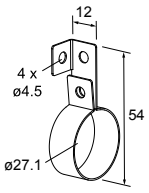
LMBRLS27O

- Set of 3 brackets
- Impact absorbing clamp
- 300 series stainless steel
- M5 stainless steel hardware included
- Extra padding for attachment around 27 mm housing
- Designed for lights over 4 feet in length



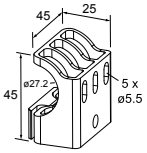
LMBWLS27H

- 300 series stainless steel mounting brackets
- M4 stainless steel hardware included



LMBWLS27U

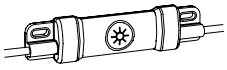
- Clear copolyester
- Clearance for M5 or #10 hardware
- Clamps securely around the light body



Dimmers and Switches

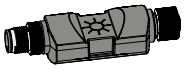
LC15T Series

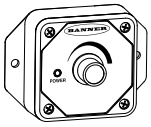
- **LC15T-127AL2RGQP** model with On/Off control and illuminated indication
- **LC15T-127AP1RBGQP** model with On/Off/Dimming control and illuminated indication
- In-line capacitive touch switch with M12 connectors
- Rated for up to 30 V DC and 4 A maximum output current
- Rugged and waterproof IP67 housing



LC25T In-Line Touch Switch

- In-line capacitive touch switch with M12 connectors
- On/Off or PWM control
- Low profile, rugged, water-resistant design
- Rated for up to 30 V DC and 4A maximum output current



LC65P1T • Potentiometer with terminal and M12 connector options • PWM control • Rated for up to 30 V DC and 4 A maximum output current • Unsealed IP20 housing	

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Chapter Contents

Chapter 5 Banner Engineering Corp Limited Warranty

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